JANNE KÄÄRIÄINEN

Stepwise, Tailored Implementation of Brief Alcohol Intervention for Risky Drinkers in Health Care

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ACADEMIC DISSERTATION
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University of Tampere, Medical School
Finland

Supervised by
Professor Kaija Seppä
University of Tampere
Finland
Docent Pekka Sillanaukee
University of Tampere
Finland

Reviewed by
Professor John Cunningham
University of Toronto
Canada
Docent Arto Vehviläinen
University of Eastern Finland
Finland

Distribution
Bookshop TAJU
P.O. Box 617
33014 University of Tampere
Finland

Tel. +358 40 190 9800
Fax +358 3 3551 7685
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Contents

Abstract

This study was initiated after Finland had joined the EU and the intended alcohol tax reductions caused concern both generally and willing health care. Several studies had shown that brief alcohol interventions are useful and cost-effective, and be considered feasible as part of health care professionals' daily work as, as little time is required and the skills needed, and can be easily learned. In spite of the scientific evidence, however implementation of brief intervention activity has been slow. The objective here was to assess means of implementing this new activity, alcohol screening and brief intervention for early-phase heavy drinkers, in different health care settings in a wide geographic area in Finland.

In order to motivate health care professionals to acknowledge the importance of this patient group, prevalence data were first collected (I). Six-year diagnoses in retrospective discharge data in Tampere University Hospital were compared with prospective data gathered from separately completed forms added to every outpatient's discharge papers during an 8-week period. In the retrospective study (1988–1993) the prevalence of substance use-related diagnoses was 0.4% of all recorded diagnoses. In the prospective study (eight weeks in 1994) the corresponding figure was 1.1%. The percentage of substance use-related visits, not necessarily producing a diagnosis was even higher, 5.6%, being highest in the emergency setting (12.5%) and in psychiatry (6%).

To optimize training and implementation strategies health care professionals were interviewed (II). Altogether 473 questionnaires, comprising 40 questions, each with two to six alternatives, were mailed to 139 units in the Pirkanmaa Health Care District, i.e. all primary and occupational health care units and each department in specialized health care in hospitals. Health care professionals' attitudes, knowledge and skills were asked and analysed in relation to alcohol-related matters. Altogether 59% of health care professionals in primary, occupational and specialized health care were positive in the matter of asking patients' alcohol consumption and 68% could bring up alcohol problems for discussion. Nonetheless only 18% of respondents found it fully acceptable to discuss patients' alcohol consumption, and only 19% believed that they could influence patients' drinking very or quite well. Respondents' own alcohol consumption did not correlate with attitudes, knowledge or skills. They also thought that patients' attitudes towards inquiry into alcohol consumption were positive (II).

Based on observed needs (II), information from the field (I, II), and earlier scientific evidence on implementation, practical education and implementation were organized (III). The key issues in this action research project were engaging leaders, keeping training short, affecting attitudes and acting on feedback. Leaders had separate half-day sessions and other professionals had five half-day seminars with the same content in different parts of the region. The aim was to reach at least one nurse and one physician from every municipality. Participants came from 26/34 municipalities, altogether 50 physicians and 117 nurses. It was hoped that this key group would deliver information in their own centers. They were also provided with all the material used in session. To respond to the need from the field a practical video, two posters and an AUDIT (Alcohol Use Disorders Identification Test) booze quiz leaflet were produced.

To activate the public to assess about their alcohol consumption and ask for help, if needed the AUDIT pamphlet was delivered to every household (90 000) in Tampere as part of the Booze Weeks action project (IV). Using the Telephone Interview system questionnaire data from 500 randomly selected inhabitants were collected. This material included twenty-two questions covering respondents' own alcohol consumption and questions on their awareness of the AUDIT pamphlet and the Booze Weeks and whether this had any effect on their alcohol use. Those who drank most frequently were also most likely to have noticed the Booze Weeks campaign and felt most concern about their drinking.

To facilitate activity in the field the final brief intervention instructions were drawn up(V). These were based on feedback from the whole action research project (III), on two questionnaires, one for health care professionals and one for patients, and on six video-taped focus groups including primary health care professionals. Qualitative analysis of this information led to a "mini-model" formulating the least that should be done for early-phase heavy drinkers in health care.

Implementation of a new activity in health care is slow and fraught with obstacles. Awareness of the needs of professionals and their perception of the importance of the activity are crucial for implementation. The present study brought on the high prevalence of cases of heavy drinking in health care. It evaluated the views of professionals and public with an eye to implementing brief interventions and used feedback to create the final instructions for action. The main contribution of the present study was in laying a basis for future development in Finland and worldwide. It activated a new study which became part of and gave content to the WHO Phase IV project, 'WHO Collaborative Project on Detection and Management of Alcohol-related Problems in Primary Health Care'. This was subsequently followed by a nationwide Finnish project supported by the Government. Since the present project work to prevent alcohol-related harm in health care has expanded from the Pirkanmaa hospital region to

national level. Even if alcohol screening and brief intervention have been slower than hoped in becoming part of health care professionals' daily work, their attitudes have gradually become more favourable. Also public opinions on alcohol policy have become stricter. These developments have served to facilitate the continuation and expansion this cost-effective activity to manage the growing patient group of hazardous drinkers.

Yhteenveto

Tutkimus käynnistyi Suomen liityttyä jäseneksi Euroopan Unioniin. Liittymisen myötä tulleet alkoholin verohelpotukset loivat uhkakuvan terveydenhuoltoon alkoholin lisääntyvästä käytöstä ja sen mukanaan tuomista haitoista. Haittoja ehkäisemään on kehitetty varhaisen puuttumisen hoitomuoto, mini-interventio, joka on todettu tehokkaaksi ja kustannustehokkaaksi. Tämän hoitomuodon on myös todettu olevan terveydenhuollon rutiinikäyttöön sopiva hoitomuoto, se on helppo omaksua eikä vaadi paljon aikaa. Lupaavista tutkimustuloksista huolimatta mini-intervention käyttö on ollut vähäistä. Tämän tutkimuksen tarkoitus oli selvittää mini-intervention jalkauttamista osaksi terveydenhuollon tavanomaista toimintaa.

Terveydenhuollon henkilökunnan aktivoimiseksi tehtiin pohjakartoitus, jossa pyrittiin selvittämään päihdeongelmien esiintyvyyttä terveydenhuollossa (I). Kuuden vuoden retrospektiivista aineistoa verrattiin kahdeksan viikon prospektiiviseen aineistoon. Aineistot kerättiin Tampereen yliopistollisesta sairaalasta. Retrospektiivinen aineisto (vv. 1988–1993) kerättiin potilastietojärjestelmästä poimimalla päihde-ehtoisten poliklinikkakäyntien diagnoosit. Tässä aineistossa päihde-ehtoisia diagnooseja oli kirjattu 0.4 % kaikista käynneistä. Kun erityistä huomiota kiinnitettiin päihdeasioihin (prospektiivinen aineisto, kahdeksan viikon jakso 1994) vastaava luku oli 1.1 %. Prospektiivisesta aineistosta löytyi vielä suurempia päihde-ehtoisia potilaskäyntilukuja, mutta niitä ei oltu merkitty diagnooseiksi. Koko aineistosta päihde-ehtoisia potilaskäyntejä oli 5.6 %, ensiavussa 12.5 % (joka kahdeksas potilas) ja psykiatrian poliklinikoilla 6%.

Terveydenhuollon henkilökunnan koulutuksen ja mini-interventiotoiminnon mahdollisimman hyvän käyttöönoton optimoimiseksi tehtiin kartoituskysely (II). Pirkanmaan sairaanhoitopiirin 139 toimipisteeseen, 473 työntekijälle, lähetettiin 40 kysymystä sisältävä kysely. Kyselyt lähetettiin kaikkiin perusterveydenhuollon ja työterveyshuollon toimipisteisiin sekä erikoissairaanhoidon kaikille erikoisaloille. Kyselyssä selvitettiin terveydenhuoltohenkilöstön tietoja, taitoja ja asenteita suhteessa alkoholiin liittyviin potilaskontakteihin. Tämän kyselyn perusteella kaikista eri toimipisteistä 59 % vastaajista suhtautui positiivisesti alkoholinkäytön kysymiseen potilailta. Alkoholinkäytön osasi ottaa puheeksi 68 % vastaajista. Tästä huolimatta vain 18 % piti täysin hyväksyttävänä sitä, että potilaan alkoholinkäyttö otetaan puheeksi vastaanottokäynnin yhteydessä ja vain 19 % uskoi pystyvänsä vaikuttamaan potilaan alkoholinkäyttötottumuksiin hyvin tai erittäin hyvin. Terveydenhuoltohenkilöstön omat alkoholinkäyttö-

tottumukset eivät vaikuttaneet heidän tietoihinsa, taitoihinsa tai asenteisiinsa. Vastaajien mielestä potilaiden suhtautuminen alkoholin käytön kysymiseen oli positiivista.

Aiempien tutkimusten ja terveydenhoitohenkilöstön tarpeiden perusteella (I, II) organisoitiin toimintatutkimus mini-interventiotoiminnan saattamiseksi käytännön työvälineeksi. Tavoitteena oli saada terveydenhuollon johtajisto sitoutumaan projektiin, antaa terveydenhuoltohenkilöstölle lyhyt, informatiivinen asenteisiin vaikuttava koulutus ja reagoida kentältä tulleeseen palautteeseen jatkokoulutuksia ajatellen. Terveydenhuollon johtajistolle oli oma puolen päivän koulutus ja muille toimijoille viisi samansisältöistä koulutustilaisuutta eri puolilla Pirkanmaan sairaanhoitopiiriä. Koulutuksiin kutsuttiin vähintään yksi hoitaja ja lääkäri jokaisesta kunnasta. Osallistujia oli 26/34 kunnasta yhteensä 167, joista hoitajia oli 117 ja lääkäreitä 50. Koulutukseen osallistuneiden toivottiin jatkossa toimivan paikallisina kouluttajina omilla työpaikoillaan ja he saivat kaiken koulutusmateriaalin mukaansa. Koulutusten myötä tulleiden toivomusten pohjalta tehtiin koulutusvideo, kaksi vastaanottotiloihin tarkoitettua julistetta ja AUDIT-kyselykaavake tulkintaohjeineen.

Tavallisten kansalaisten mielenkiinnon herättämiseksi alkoholin käyttöön liittyviin asioihin, jaettiin alkoholin käyttöä kartoittava kymmenkohtainen kysely, AUDIT, kaikkiin tamperelaisiin kotitalouksiin (90 000). Kyselylomake oli osa samaan aikaan järjestettävää kansallista Viinaviikot-tapahtumaa. Heti tapahtuman jälkeen tehtiin 500 kotitalouden haastattelu puhelimitse. Kysely piti sisällään 22 kysymystä mm. vastaajan omasta alkoholinkäytöstä ja Viinaviikkojen sekä AUDIT-kyselyn havaitsemisesta. Lisäksi kysyttiin, oliko kampanjalla tai AUDIT-kyselyllä ollut vaikutusta omaan alkoholin käyttöön. Tulokseksi saatiin, että runsaimmin juovat olivat parhaiten havainneet Viinaviikot ja olivat myös eniten huolissaan omasta alkoholin käytöstään.

Mini-interventio -aktiivisuuden lisäämiseksi tehtiin mahdollisimman yksinkertainen ohje (V). Se perustui aiemmin järjestettyjen koulutusten myötä tulleeseen palautteeseen (III), kahteen myöhemmin järjestettyyn kyselyyn ja kuuteen videoituun fokusryhmähaastatteluun. Näiden pohjalta tehty laadullinen analysointi johti ”minimalliin”, jossa reseptikirjamaisesti ohjattiin, kuinka toimia alkoholin suurkuluttajien kanssa terveydenhuollossa.

Uusien toimintojen käyttöönotto terveydenhuollossa on hidasta ja vastaan tulee erilaisia esteitä. Terveydenhuoltohenkilöstön tarpeet ja heidän ymmärryksensä uusien asioiden tärkeydestä ovat ensiarvoisen tärkeitä otettaessa uusia toimintamalleja käyttöön. Kyseinen tutkimus osoitti alkoholin ongelmakäyttäjien suuren määrän terveydenhuollossa. Tutkimuksen aikana selvitettiin terveydenhuoltohenkilöstön ja kansalaisten näkemyksiä mini-interventioon. Heiltä saadun palautteen myötä tehtiin lopullinen ohje, kuinka käyttää mini-interventiota terveydenhuollossa. Tutkimuksen suurin hyöty oli luoda pohjaa mini-intervention käytön laajentumiselle ja kehittämiselle Suomessa ja

muualla maailmassa. Tutkimuksen pohjalta on syntynyt uusia tutkimuksia, jotka ovat olleet osa WHO:n kehittämisprojektia. Pirkanmaan sairaanhoitopiirissä alkanut projekti on levinnyt nyt koko maahan. Vaikka alkoholin käytön seulonta ja varhainen puuttuminen hoitomuotona ovat juurtuneet odotettua hitaammin jokapäiväisiksi toiminnoiksi terveydenhuoltoon, ovat henkilöstön asenteet muuttuneet edellä mainittuja toimintoja kohtaan positiivisemmiksi. Toisaalta kansalaisten suhtautuminen vallitsevaan alkoholipolitiikkaan on muuttunut tiukemmaksi. Kaikki edellä mainittu suosii mini-interventiotoiminnan laajentamista ja tämän kustannustehokkaan hoitomuodon käytön lisäämistä, kohteena alkoholin varhaisen vaiheen riskikäyttäjät.

Abbreviations

Alko Inc., State-owned alcohol company
ALT Alanine aminotransferase
AST Aspartate aminotransferase
AUDIT Alcohol Use Disorders Identification Test (10 questions)
AUDIT-C questionnaire including the three first questions of the AUDIT (quantity, frequency, and binge drinking)
AUDIT-PC AUDIT-based questionnaire
AUDIT-3 questionnaire including the third AUDIT question (binge drinking)
BAC Blood alcohol concentration
BI Brief Alcohol Intervention
BMDP statistical software
CAGE Acronym of four questions widely used in screening for alcoholism
CDT Carbohydrate-deficient transferrin
DSM-IV Diagnostic and Statistical Manual of Mental Disorders (4^{th} edition)
FAST AUDIT-based alcohol questionnaire
FDA U.S. Food and Drug Administration
EU European Union
FRAMES Acronym; Feedback, Responsibility, Advice, Menu, Empathy, Self efficacy
GGT gamma-glutamyltransferase
GP General Practitioner
HDL High-density lipoprotein
ICD-9 and 10 International Statistical Classification of Diseases and Related Health Problems 9^{th} and 10^{th} revision
MCV Mean corpuscular volume
NIAAA National Institute on Alcohol Abuse and Alcoholism
NNT Number Needed to Treat
PHC Primary Health Care
PHEPA Primary Health Care European Project on Alcohol
SBI Screening and Brief Intervention
TLFB Time-line follow-back
QALY Quality-Adjusted Life Year
WHO World Health Organization

List of original publications

This dissertation is based on the following original publications, which are referred to in the text by their Roman numerals.

I Sillanaukee P, Kääriäinen J, Sillanaukee P, Poutanen P, Seppä K (2002): Substance use- related outpatient consultations in specialized health care: an underestimated entity. Alcohol Clin Exp Res 26:1359-1364.

II Kääriäinen J, Sillanaukee P, Poutanen P, Seppä K (2001): Opinions on alcohol-related issues among professionals in primary, occupational, and specialized health care. Alcohol Alcohol 36:141-146.

III Kääriäinen J, Sillanaukee P, Poutanen P, Seppä K (2001): Brief intervention for heavy drinkers: an action project for health care implementation. Alcologia, European Journal of Alcohol Studies 13:67-74.

IV Kääriäinen J, Aalto M, Kääriäinen M, Seppä K (2008): AUDIT questionnaire as a tool for community action against hazardous drinkers. Alcohol Alcohol 43:442-445.

V Seppä K, Pekuri P, Kääriäinen J, Aalto M (2004): Brief alcohol intervention as a daily routine. Description of an action research project creating instructions for primary health care. Adicciones 16:315-322.

INTRODUCTION

The growth of alcohol consumption increases alcohol-related morbidity, mortality and other detriment in society. Alcohol has been shown to be causally related to more than 60 different medical conditions (Rehm et al. 2003, Cargiulo 2007, Rehm et al. 2009), and WHO has identified the consumption of alcohol as one of the top-10 risks for the worldwide burden of disease (Ezzati 2004). In most diseases there is a dose-response relation to volume of alcohol consumption, the risk of the disease increasing with higher volume. The increase in mortality due to alcohol drinking is J-shaped, with a reduced risk for light drinkers (Klatsky 2007) . In a meta-analysis of thirty-four studies, the lowest mortality was observed at 6g of absolute alcohol per day (Di Castelnuovo et al. 2006) . The authors concluded that low levels of alcohol intake (1–2 drinks per day for women and 2-4 drinks per day for men) are inversely associated with total mortality (Di Castelnuovo et al. 2006). In spite of this inverse association of low alcohol consumption, excessive alcohol use is a major public health problem. The economic costs of alcohol abuse are high, involving to various components such as health care services, premature deaths, reductions in workers' productivity and costs associated with alcohol-related crime and motor accidents (10^{th} special report to the U.S. Congress on Alcohol and Health, http://pubs.niaaa.nih.gov/publications/10report/intro.pdf.)

Since the 1970s, adult per capita alcohol consumption has been in decline in many Western countries (Rehm et al. 2001). Finland is an exception, total alcohol consumption being on the increase (Yearbook of Alcohol and Drug Statistic 2006, http://www.stakes.fi/tilastot/ tilastotiedotteet/2008/paihde/Alcoholyearbook2008.pdf), even if the opinions of Finns on alcohol policy have become stricter over time. The proportion of those calling for stricter alcohol policies rose from 55 to 88 per cent from 1994 to 2006. (http://www.stakes.fi/tilastot/tilastotiedotteet/2008/paihde/ Alcoholyearbook2008.pdf). Total consumption includes both documented and undocumented use of alcohol. Documented consumption includes sales in Alko (Alko Inc. is an independent, entirely State-owned alcohol company) stores and wholesalers' deliveries of alcoholic beverages to grocery stores and licensed restaurants. Undocumented consumption includes legal and illegal domestic brewing and distilling, imports from overseas, smuggling and surrogates.

Showering of alcoholic beverage taxes and prices is known to increase consumption and alcohol-related problems. The traditional off-premise monopoly system, which effectively limits alcohol consumption, is breaking down in Finland as

elsewhere. The liberalization of alcohol availability has twice significantly increased the consumption levels. During 1968, after the sale of malt beverages was liberated from the monopoly of Alko, total alcohol consumption increased by 46%. In 1995 Finland became a member of the European Union (EU), with only a short transition period to a relaxation of alcohol policy and detrimental effects were expected. Based on EU regulations an important change in Finnish alcohol policy took place in 2004. Since then travellers have been able to import unlimited amounts of tax-free alcoholic beverages from other EU countries for their own use. Excise duties on alcoholic beverages were lowered simultaneously and thereupon consumption increased by 10.5%, from 9.4 litres to 10.5 litres per capita in two years (Yearbook of Alcohol and Drug Statistic 2006). The predicted adverse consequences of increased alcohol consumption came true. In 2008, the total consumption of alcohol was 10.4 litres (Yearbook of Alcohol and Drug Statistic 2009, http://www.stakes.fi/tilastot/ tilastotiedotteet/2009/paihde/ Alcoholyearbook2009.pdf).

The *WHO Collaborative Project on Detection and Management of Alcohol-related Problems in Primary Health Care* has aimed at early detection of hazardous drinking and implementation of brief alcohol intervention in primary health care (PHC) (Heather 2006b). In phase I a reliable and valid screening instrument, the AUDIT (Alcohol Use Disorders Identification Test), was developed (Saunders et al. 1993). Phase II was a randomized clinical trial of screening and brief intervention in PHC, phase III compared the effectiveness of different marketing strategies and phase IV concentrated on widespread implementation (Heather 2006a, Heather 2006b). Phase IV was an iterative process aiming at the development and application of countrywide strategies for widespread, routine and enduring activity in PHC throughout participating countries (Heather 2006b). WHO phase II and several other studies showed alcohol brief intervention to be an effective and cost-effective method of treatment. It is nonetheless only rarely used in health care (Nilsen et al. 2006).

In 1995 at the beginning of the present study Tampere University Hospital's multiprofessional Drug and Alcohol Group initiated a regional project to prevent alcohol-related harm in health care. The undertaking was prompted by fear of the consequences of increased drinking and also by the promising results of brief-intervention studies. The aims were to provide practical training and to motivate health care professionals to use brief intervention in their daily work. It was also considered important to evaluate the activities of professionals and to communicate with them actively during the implementation process. The present study was linked with the project, and sought to evaluate the implementation process in primary and specialized health care.

Review of the literature

1. Definitions of alcohol consumption

1.1 Drinks and drinking

The concept of a "standard drink" or unit was introduced as a basis in advising people whether they are drinking within reasonable limits to thresholds for avoid potential harm and whether they are likely to experience the health benefits of alcohol. The limits of the 'standard drink' vary in different countries, measure of standard drink or unit size ranging from the equivalent of 8 g of ethanol in the United Kingdom to 19.75 g in a Japanese standard drink, or *go*. In Finland a 'standard drink' contains about 12 g of absolute alcohol. This is roughly one bottle of beer (33 cl), one glass of wine (12 cl), or one shot of hard spirit (4 cl).

Definitions regarding the thresholds of risky alcohol consumption also vary. The internationally accepted standard measure for alcohol consumption is 'grams (g) of absolute alcohol consumed per day/week or on one occasion'. In Europe risky weekly drinking limits vary between 140 g (Poland) to 315 g (Belgium) for males and 70 g (Poland) to 210 g (Italy) for females. In the United States the national recommendation is up to 196 g a week for males and 98 g for females, in Canada 189 and 126 g per week, respectively. Commercial measures of most alcohol beverage forms often vary from one country to another and are largely shaped by local drinking habits, which is a one reason for the considerable differences between drinking guidelines in different countries. (http://www.icap.org/PolicyIssues/DrinkingGuidelines/GuidelinesTable/tabid/204/Default.aspx, http://www.who.int/substance_abuse/publications/en/Alcohol%20Policy%20Report.pdf)

In Finland the thresholds for risky drinking are for men 24 (280g) drinks per week, for women 16 (190g). Heavy episodic drinking ('binge drinking') can be defined as a consumption of at least 7 (80g) standard drinks for men and 5 (60g) for women on one drinking occasion. These are general guidelines for healthy adults (18–65 years), average sized men and non-pregnant women. It must also be remembered that there is no level of drinking which is safe for all people at all times. National guidelines are not 'safe drinking levels' but limits which indicate intervention in patients' drinking in a health care setting (Sillanaukee et al. 1992). These drinking levels are based on epidemiological data on alcohol health hazards and are adapted to our national culture.

It has also been highlighted in publishing these limits that there is wide variability in individual reactions to alcohol, determined by factors such as gender, body size and composition, age, genetics, nutrition and individual metabolism.

The wide variation in definitions of drinks and risky drinking limits make any form of international study comparisons difficult, if not impossible.

1.2 Lexicon of alcohol consumption

The terminology for different drinker groups is loosely defined. One term might in different settings and cultures carry different meanings, which makes difficult comparison of studies. The main terminology is as follows:

Abstinence i.e. teetotal has diverse forms and definitions. It may be temporary or permanent abstinence from alcohol. For example Dawson and associates define it as consuming less than 12 drinks in a 1-year period (Dawson et al. 1995).

Moderate (sensible, light, social) drinking is difficult to define since it means different things to different people in different cultures and with different ethnic values. Moderate drinking may have both benefits and risks but can be taken to mean drinking that does not generally cause problems, either for the drinker or for the environment. A suggested synonym is lower-risk drinking (Dufour 1999).

The World Health Organization has launched the term *Hazardous drinking*. This implies that no harm is as yet incurred but the amount is sufficient to cause harm over time (http://www.who.int/substance_abuse/terminology/who_lexicon/en/index.html). The term hazardous use is currently not a diagnostic term in ICD-I0 (http://www.who.int/classifications/ icd/en/).

Alcohol use disorder is a term which covers the diagnostic categories harmful drinking (or alcohol abuse) and dependence but not hazardous drinking. *Harmful drinking,* a diagnostic term in ICD-10, signifies a pattern of drinking which has already caused physical, social or psychological harm without meeting the criteria for alcohol dependence (World Health Organization 1992, http://www.who.int/classifications/ icd/en/)). *Alcohol abuse*, a diagnostic term in DSM-IV (American Psychiatric Association. 1994. *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.) (DSM-IV). Washington, D.C.: APA.), is defined as a continued use of alcohol despite significant negative physical, psychological and social consequences. Recurrent alcohol use can result for example in failure to fulfil major role obligations at work; it can cause alcohol-related legal problems, intoxications and violence. As a diagnostic category it can be compared to harmful drinking in ICD-10 but in reality these two categories come to apply to very different patient groups (http://www.who.int/classifications/icd/en/).

Alcohol dependence refers to a maladaptive pattern of alcohol use leading to significant impairment or distress. A great deal of time is spent in activities necessary to obtain alcohol, use alcohol or recover from its effects. Important social, occupational or/and recreational activities are given up. Alcohol is the centre of interest. Alcohol dependence is a diagnostic term in both ICD-10 and DSM-IV classification systems, in this case referring to very similar patient groups. *Alcoholism* means almost the same and is an older term but weak is its inexactness.

Heavy episodic or binge drinking is consumption of approximately 5 drinks or more (at least 60 g) per occasion (Room 1991, Wechsler and Isaac 1992). In Finland heavy episodic drinking is considered risky if a woman drinks five or more and man seven or more drinks (à 12 grams) absolute alcohol on one occasion at least weekly.

Risky (excessive, heavy) drinking can be loosely defined as consumption, which exceeds daily, weekly, or per-occasion alcohol thresholds. It is sometimes used as a synonym for hazardous drinking but may also refers to hazardous, harmful, heavy episodic and dependent drinkers. The latest term suggested to include hazardous, harmful and dependent drinkers is unhealthy alcohol use (Saitz 2005).

2. Prevalence of risky drinking

Alcohol-related risks tend to increase as consumption levels increase on individual and on population level.

2.1 General population

The prevalence of risky drinking in the general population has been estimated to be 6.5–22% among men and 2–7% among women (Hilton 1987, Simpura 1997, Smart et al. 1991, Alvarez and Del Rio 1994, Chan 1994, Cherpitel 1994, Cherpitel 1995, Holmila 1995, Bongers et al. 1997, Cherpitel 2000, Teesson et al. 2000, AIWH. 2004 National Drug Strategy Household Survey. 2005, http://www.aihw.gov.au/publications/index.cfm/title/10122). In Australia in 2004 almost 30 000 people aged 12 years and over provided information on their substance use patterns and risky drinkers were found in 6.5% of men and in 7.5% of women in the age group 29 and under, female risky drinkers outnumbering males (http://www.aihw.gov.au/publications/index.cfm/title/10122).

In Finnish studies of Drinking Habits (Holmila 1995) and in the Lahti project (Sillanaukee 1997) 13–22% among men and 4–5% among women were found to be

risky drinkers. In earlier studies it has been estimated that 250 000–500 000 Finnish inhabitants are risky drinkers (Simpura 1987, Aalto et al. 2009). The first study ever to estimate the prevalence of hazardous drinkers separately from other risky drinkers (Halme et al. 2008) found that 8.5% of men and 3.1% of women belonged to this category. Based on the above information it has been estimated that up to 600 000 Finnish inhabitants are risky drinkers (Halme et al. 2008).

2.2 Health care

In primary health care the prevalence of risky drinking has been 5–40% among men and 0.3–24% among women (Wallace and Haines 1985, Nicol and Ford 1986, Wiseman et al. 1986, Wallace et al. 1987, Cherpitel 1991, Simon et al. 1991, Escobar et al. 1993, Saunders and Latt 1993, Cherpitel 1994, Reid et al. 1999, Cherpitel 2000, Proude et al. 2006, Cherpitel and Ye 2008). In Australia Proude and colleagues found 13.8% risky drinkers among primary health care male patients and among females 3.9% (2006). Cherpitel and Ye concluded that 23% of patients in primary health care are risky drinkers (2008). In Finland 20 % of male and 9% of female, primary health care patients, have been found to be risky drinkers (Aalto et al. 1999). Alcohol abuse has been reported to be the most common reason for referral from general practice to hospitals among males in the age group less than 65 years in Finland (Vehviläinen et al. 1999)

Among hospital patients risky drinking is common, but comparison of different studies is difficult. Some separate alcohol dependence from hazardous drinking, some have counted them together. Hospitalized patients are estimated to be hazardous/ harmful drinkers or alcohol abusers in 13–32% of cases (Elvy and Gillespie 1985, Umbricht-Schneiter et al. 1991, Cherpitel et al. 2004, Roche et al. 2005, Fleming et al. 2007, Cherpitel and Ye 2008). In Switzerland Fleming and associates found 13.1% of women to be hazardous drinkers and of men 32.8% (2007). Among emergency room patients in the USA Cherpitel and Ye found 23% hazardous drinkers (2008). Measured by estimated blood alcohol concentration (BAC) in the emergency room, Cherpitel found in her review (27 studies since 1995) that 4–59% of injured patients had positive BAC (2007). Using alcohol-related diagnoses the prevalence is much lower, only 1.4–1.9% (Taylor et al. 1986, Rose et al. 2008). In Finland risky drinking has been estimated to account for 17% of emergency admissions (Antti-Poika et al. 1988) In a one-day survey of patients in a large university hospital, 17% of men and 14% of women were diagnosed as heavy drinkers (Seppä and Mäkelä 1993).

As in other Western countries the proportion of abstainers has decreased in Finland. In the Drinking Habit Survey in 1968 the proportion of those abstaining from

alcohol was 13% among men and 43% among women, as against 10 % among men and 13% among women in the 2006 survey (Yearbook of alcohol and drug statistics 2007, http://lib.stakes.fi:2345/?PBFORMTYPE=01002&TITLEID=42218&DATABASE=1&MAX).

3. Risky drinking and health care

The list of health risks related to drinking is long. Hazardous drinkers may experience harm associated with their alcohol use but do not meet the criteria for alcohol abuse or dependence. Even if alcoholics turn the highest risk of alcohol-related harm, most problems still accrue to the lesser-drinking majority of the population simply because this group is much larger. This is the so called preventive paradox (Kreitman 1986). In Finland as elsewhere the majority of problems are found among the 90% consuming less than the uppermost 10% of all alcohol consumers (Poikolainen et al. 2007).

The WHO Global Status Report on Alcohol 2004 has collected the ICD-10 codes where alcohol is one of the underlying risk factors. Risky drinking before dependence (e.g. hazardous or harmful drinking) may also be associated with numerous health and social problems. Hazardous drinkers often attend health care without knowing that their symptoms are related to alcohol. Such patients could be identified through routine medical consultations or screenings (health check-ups), upon a admission to an emergency department as a result of alcohol-related injuries and after arrest for drunken driving (Anderson et al. 2005, Anderson and Baumber 2006, http://ec.europa.eu/health/ph_determinants/life_style/alcohol/documents/alcohol_europe.pdf, http://pubs.niaaa.nih.gov/ publications/AA72/AA72.htm).

3.1 Symptoms and signs

Many risky drinkers or even health professionals fail to notice the connection between symptoms and risky drinking. In risky drinking the spectrum of symptoms is wide; for example high blood pressure, irregular heart beat, atrial fibrillation, sleep disorders, depression, anxiety, aggressiveness, abdominal complaints, weight gain, headaches, impotence, nausea, diarrhoea and vomiting, scars and bruises. Risky drinking may also underline obesity (Cherpitel 1993b, NIAAA 2005).

3.2 Deterioration of disease

In many cases risky drinking may worsen diseases such as diabetes, psoriasis, erythema or neurological and psychiatric disorders, and interfere with for example anticoagulant therapy. Alcohol can directly suppress the immune response and lead for example to viral or bacterial infections, frequent colds and an increased risk of pneumonia. Alcohol is related to cancers of the oral cavity, larynx, oesophagus, liver, colon and female breast - causally (Rehm and Bondy 1998, Room et al. 2005, Anderson and Baumber 2006, http://ec.europa.eu/health/ph_determinants/ life_style/alcohol/documents/ alcohol_europe.pdf, http://pubs.niaaa.nih.gov/publications/AA72/ AA72.htm).

3.3 Abnormal blood tests

Abnormal blood test results may give a clue of patients' risky drinking, but they are neither specific nor sensitive enough to diagnose this. Risky drinking can cause lowered testosterone levels, increased liver enzyme GGT (gamma-glutamyltransferase) and the ratio of ALT/AST (alanine aminotranferase/aspartate aminotransferase), toxic effects on the maturation of red blood cells may cause an increase in MCV (mean corpuscular volume), and HDL (high-density lipoprotein) cholesterol, triglycerides and uric acid values may increase. CDT (carbohydrate-deficient transferrin) is an objective marker for the detection and monitoring of alcohol abuse (Helander 2003, Fleming et al. 2004). Carbohydrate-deficient transferrin is the only test approved by the FDA (U.S. Food and Drug Administration) for the identification of heavy alcohol use (Das et al. 2008). Its specificity is almost 90 % even if its sensitivity in detecting hazardous drinkers is not better than that of the traditional markers GGT and MCV (Poupon et al. 1989, Sillanaukee et al. 1993, Lof et al. 1994, Sillanaukee et al. 1998).

3.4 Traumas, injuries and indirect consequences of drinking

Alcohol plays a significant role in traumas; motor vehicle injuries, falls, fires and burns, hypothermia and frostbite. Suicides and homicides are in many cases alcohol-related. Alcohol is also an important contributing factor in sexually transmitted diseases. It is implicated in many social problems such as family conflict, arrests, drinking driving, injuries related to violence, job instability and frequent short periods of sick leave.

3.5 Alcohol-related diagnoses

Diagnostic classification includes more than twenty alcohol related-diagnoses. Physical diseases include for example alcohol and liver diseases, intoxications, polyneuropathy, cardiomyopathy, gastritis and withdrawal delirium. Mental diseases such as amnestic syndrome and dementia, jealousy, psychosis, alcohol dependence and alcohol abuse are common (www.who.int/whosis/ icd10/). During pregnancy alcohol may cause foetal alcohol spectrum disorder involving mental and physical deficiencies in the child (Schorling and Buchsbaum 1997, Ustun et al. 1997, McRae et al. 2001).

4. Detection of risky drinking

Most people throughout the world consult a physician or other health worker at least once a year and most contacts are made for primary health care (Babor and Higgins-Biddle 2001). Primary health care has thus a unique position in identifing patients whose drinking is risky to their health (Anderson 1996). Patients have confidence in the expertise of health care workers and expect them to be interested in the health effects of drinking (Babor and Higgins-Biddle 2001). Detection of risky drinking is however difficult because patients tend to underestimate their alcohol consumption. Hence structured questionnaires and laboratory markers have been developed to increment information gained by clinical interview.

4.1 Interview

In primary health it is recommended to take a care the patient history of alcohol consumption as a part of daily work (http://www.kaypahoito.fi/web/kh/suositukset/naytaartikkeli/tunnus/hoi50028, Anderson et al. 2005). Attention should be paid to any symptoms which may be alcohol-related. It is essential that interviewing be done in a non-judgemental and non-threatening manner (Miller et al. 1993). Direct questions should be used to obtain specific information on consumption. Open-ended rather than closed questions are recommended to ensure reliable information. Interviewers should ask the number of standard drinks consumed per day or per week to determine whether risk limits are being exceeded. In addition to the mean weekly consumption, the type of drink (beer, wine, hard liquor), frequency of binge drinking, and patients' own concern over alcohol consumption should be asked. Many times patients do not recognise the

connection between their symptoms and risky drinking. It is thus the health care professionals' responsibility to identify and elaborate on the problem (Babor and Higgins-Biddle 2001). Especially for research purposes the best possible mode of interview is a calendar-based time-line follow-back (TLFB) method (Sobell and Sobell 1993, Sobell et al. 2003).

4.2 Structured questionnaires

In primary health care the goal of alcohol-related screening is to identify risky drinking patients and to initiate further assessment of alcohol-related problems. The sensitivity of questionnaires is more important than the specificity (Anderson et al. 2005). The CAGE test is a brief and fairly effective screening test for lifetime alcohol abuse and dependence (Mayfield et al. 1974, Buchsbaum et al. 1991), but it is rather insensitive for detecting hazardous drinking (Crowe et al. 1997, Bradley et al. 1998, Conigrave et al. 2003).

The AUDIT test was constructed by WHO (World Health Organization) investigators collaborating in a six-country project (Babor et al. 1992, Saunders et al. 1993, Babor et al. 1994). The full AUDIT consists of 10 structured questions. The cut-off point for hazardous drinking is 8 points (range 0–40). In their systematic review Reinert and Allen found the AUDIT to be fairly sensitive and specific (2002). Subsequently the same authors recommended lowering the cut-off for more effective detection of hazardous drinking among women (Reinert and Allen 2007). For example French authors have used cut-off points of 7 for men and 6 for women (Gache et al. 2005). Finland has recently adopted limits $\geq$8 for men and $\geq$ 6 for women (http://www.kaypahoito.fi/web/kh/suositukset/naytaartikkeli/tunnus/hoi50028, Seppä and Aalto 2009). The last meta-analysis of alcohol use disorders identification tests for detecting at-risk drinking concluded that the AUDIT should be restricted to primary care populations, inpatients and elderly patients (Berner et al. 2007).

The strengths of the AUDIT are that it is brief and easy to administer, it is relatively free of cultural bias, and there is no copyright fee for its use. On the other hand, the major obstacle to routine screening for heavy drinking using the full AUDIT is the length of the 10-item questionnaire. For this reason shorter AUDIT questionnaire versions, for example the AUDIT-PC (Piccinelli et al. 1997), the AUDIT-3 (including the third AUDIT question on binge drinking) (Gordon et al. 2001) and AUDIT-C (including the three first questions of the AUDIT) (Bush et al. 1998) and the FAST (Hodgson et al.2002) have been developed. Even if all seem promising, more research evidence and tailoring for different cultures are still needed (Reinert and Allen 2007, Tuunanen et al. 2007, Seppä and Aalto 2009).

4.3 Clinical examination

Medical history and clinical signs are valuable means of detecting risky alcohol consumption. Recurrent insomnia, anxiety and depression, heartburn, fractures or dislocations may be found in the medical history. Clinical signs such as high blood pressure or/and pulse rate, arrhythmia, scars, dermatitis, facial erythema, oedema of the soft palate or parotid swelling may be signs of risky drinking (Saunders and Conigrave 1990, Cherpitel 1993a, Cherpitel 1993b, Kitchens 1994, Current Care Guidelines 2005, http://www.kaypahoito.fi/web/kh/suositukset/naytaartikkeli/tunnus/ hoi50028).

4.4 Laboratory markers

One important element in the of objective detection of risky alcohol use is the laboratory test. Laboratory indicators should be both specific and sensitive so that clinicians may objectively identify patients who have been drinking risky levels of alcohol. An optimal test should give normal values both for abstainers and moderate drinkers. On the other hand only risky consumption of alcohol should bring out laboratory markers. So far no laboratory test is specific for risky alcohol use; for example obesity is an important factor which may also increase serum GGT (Daeppen et al. 1998, Salaspuro 1999a, Current Care Guidelines 2005, http://www.kaypahoito.fi/web/kh/suositukset/naytaartikkeli/tunnus/hoi50028).

Measuring ethanol in breath, blood, or urine is the most objective means of detecting recent intake of alcohol. This works well for example when testing for drunk-driving or in trauma admissions to the emergency room. Repeated positive breath or blood test in the health care setting could be a sign of hazardous drinking or even of worse alcohol problems. The difficulty is that the ethanol consumed is cleared fairly rapidly from the body, at a rate of almost 0.1 g/kg/hr. A patient may have consumed substantial amounts of alcohol (60–80 g pure ethanol) in the evening but still yield negative blood or breath ethanol test results the next morning (Bendtsen et al. 1998, Helander et al. 1999). However, risky drinking can be suspected if a patient comes to a consultation inebriated BAC (≥1‰), if there are no visible signs of drinking with a BAC ≥1.5‰, or if the patient in any situation has a BAC concentration of over 3‰ (NIAAA "Alcohol and Trasportation Safety", *Alcohol Alert,* http://pubs.niaaa.nih.gov/publications/aa52.htm.).

Fairly objective measures to help clinicians to identify patients who are risky drinkers are liver enzyme GGT (gamma-glutamyltransferase) and red blood cell mean volume MCV (mean corpuscular volume). CDT (carbohydrate-deficient transferrin) is

an objective marker for the detection of risky drinking and it has higher specificity as compared to that of GGT (Salaspuro 1999a).

Chronic ethanol consumption induces a rise in serum GGT (gamma-glutamyltransferase) (Anton et al. 2002, Niemela 2007, Niemela and Alatalo 2010). Also moderate drinkers have shown significantly higher levels of GGT than abstainers (Hietala et al. 2005). GGT is perhaps the most widely used laboratory index of excessive alcohol consumption (Conigrave et al. 2003). To detect early hazardous drinking however the sensitivity is only 10-30% (Salaspuro 1999a, Scouller et al. 2000, Arndt 2001), and specificity being lowered by for example obesity (Daeppen et al. 1998).

MCV (mean corpuscular volume) of red blood cells is often used in screening for risky drinking. Comparing abstainers and moderate drinkers at population levels, MCV may increase in the latter group. On the other hand, MCV responds slowly to abstinence (normalization takes two to four months) and could be of use in monitoring alcohol use (Niemela 2007). MCV has limited value as a screening by reason of its poor sensitivity, typically under 50% (Anderson et al. 2005). Meerkerk and colleagues detected less than 20% of the MCV values of excessive drinkers in health care settings (1999). On the other hand, MCV is more specific than GGT in most populations, with specificities of more than 90% (Meerkerk et al. 1999).

It has been estimated that four to seven drinks per day for at least one week can significantly elevate CDT (carbohydrate-deficient transferrin) levels in patients suffering from alcoholism (Stibler 1991). The findings on sensitivity vary widely from < 20% to 100%, specificities 75-100% (Nystrom et al. 1992, Xin et al. 1992, Lof et al.1993, Lof et al. 1994, Scouller et al. 2000, Conigrave et al. 2002). To increase diagnostic accuracy Sillanaukee and Olsson provided an algorithm for combining CDT and GGT, the resulting combination showing higher accuracy than either test alone (2001). Mathematic combination of GGT-CDT offers average sensitivity and specificity for males 75% and 93%, and respectively for women 68% and 96% (Sillanaukee and Olsson 2001). In the case of problem drinkers Chen and associates found that for men a combination of CDT and GGT provided the best accuracy in detecting daily consumption of 60 g ethanol or more in the past 30 days. For women, GGT alone provided the best accuracy for such a level (Chen et al. 2003). In the review by Niemelä CDT appears to be a highly specific marker of ethanol intake (98 % when average alcohol consumption was 130 g/day) and a mathematically formulated combination of GGT and CDT seems to improve sensitivity to as high as 98% (2007). The results in detecting early hazardous drinking by CDT and GGT are modest (Hietala et al. 2005).

New biological markers of alcohol use and abuse are being sought; acetaldehyde adducts (Niemela 1993, Sillanaukee et al. 1993), 5-hydroxytryptophol (Beck and

Helander 2003, Beck et al. 2007), ethylglucuronide (Borucki et al. 2005), phosphatidylethanol (Alling et al. 2005, Wurst et al. 2005) and sialic acid (Anttila et al. 2005), but so far these are not in daily use and studied mainly among more aggravated problems.

Each mode of assessment has its limitations affecting sensitivity and specificity. Commonly available laboratory markers, in combination, identify approximately 70 % of risky drinkers. Combining interview, structured questionnaire, clinical examination and laboratory tests could identify most risky drinkers (The Finnish Current Care Guidelines 2005, http://www.kaypahoito.fi/web/kh/suositukset/naytaartikkeli/tunnus/hoi50028).

5. Brief intervention

Brief interventions are those practices in health care, which aim to identify real or potential alcohol-related risks and motivate a patient to do something about hazardous drinking as early as possible before dependence has developed.

5.1 Content

The U.S. Preventative Services Task Forces' Guide to Clinical Preventive Services (2d edition, 1996, http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=hscps2ed1996) describes secondary prevention measures as those which "identify and treat asymptomatic persons who have already developed risk factors or preclinical disease but in whom the condition is not clinically apparent." In 2001 WHO published the manual Brief intervention for hazardous and harmful drinking. The content is similar and it notes: "Primary health care workers are in a unique position to identify and intervene with patients whose drinking is hazardous or harmful to their health." (http://whqlibdoc.who.int/HQ/2001/WHO_MSD_MSB_01.6b.pdf) Brief interventions typically emphasize a reduction of the patient's alcohol consumption to non-hazardous levels and elimination of binge drinking rather than insistence that the patients abstain from drinking. Brief interventions can be useful in a variety of settings; at physical examination, at GP appointments, at out-of-ward, emergency departments or trauma centres.

Unlike traditional alcoholism treatment brief interventions can be dispatched in a few minutes and require minimal follow-up. They should form part of routine in health care without stigmatization of patients. Inquiry into alcohol consumption should be

neutral and questions should be implemented among other medical history questions such as living habits, e.g. tobacco, smoking, consumption of coffee etc. (Heather 1989, http://pubs.niaaa.nih.gov/publications/AA66/AA77.html 2005).

5.1.1 Identification

There are a range of questionnaires which can be used to identify hazardous and harmful alcohol consumption. When using the AUDIT attention should focus on the patient whose AUDIT screening test score is in the range of 8-15 and/or risky drinking levels have been exceeded. Note should be taken of the number of standard drinks consumed on one occasion or the typical quantity per week. Laboratory tests and clinical findings could support and be a part of the routine examination (Anderson et al. 2005).

5.1.2 Advice

The health care professional's role is to give information on risky drinking and alcohol problems in relation to patient's health. Without stigmatization, health care professionals' spoken advice and a simple brochure will support the patient in reducing alcohol consumption. The goal for most patients is to choose moderate drinking levels (Whitlock et al. 2004, Anderson et al. 2005, the Finnish Current Care Guidelines 2005, http://www.kaypahoito.fi/web/kh/suositukset/naytaartikkeli/ tunnus/hoi50028).

The basic goal in brief interventions is to reduce levels of alcohol consumption. Here the acronym FRAMES captures the essence. FRAMES includes; Feedback: on personal risk or impairment, Responsibility: emphasis on personal responsibility for change, Advice: to cut down consumption of alcohol or abstain, Menu: provide options for changing drinking patterns, Empathy: use an emphathetic approach and Self-efficacy: enhances peoples' belief in their ability to change (Miller and Rollnick 1991, Bien et al. 1993).

The terms brief and minimal interventions cover a range from one five-minute interaction to several 45-minute sessions. The major positive studies discussed in this section typically consist of one interaction lasting between five and 20 minutes. In Finland the recommendation is 15–20 minutes with one to four follow-ups (Finnish Current Care Guidelines 2005, http://www.kaypahoito.fi/web/kh/suositukset/ naytaartikkeli/tunnus/hoi50028).

5.1.3 Follow-up and documentation

The number of BI sessions is from 1-5; thus follow is often recommended. Laboratory tests are good objective tools to follow the development of alcohol consumption. Health care professionals should continue to provide support and feedback and maintain realistic goals. (Anderson et al. 2005, Finnish Current Care Guidelines 2005, http://www.kaypahoito.fi/web/kh/suositukset/naytaartikkeli/ tunnus/hoi50028).

It is also essential to document screening and brief intervention in the patient history (Chick et al. 2003, Anderson et al. 2005).

5.2 Effectiveness

Several studies have been published on screening and brief intervention. Brief intervention is an effective and well documented treatment mode to reduce alcohol consumption (Bien et al. 1993, Kahan et. al 1995, Wilk et al. 1997, Ashenden et al. 1997, Poikolainen 1999, Moyer and Finney 2002, Salaspuro 2003, Ballesteros et al. 2004, Whitlock et al. 2004, Bertholet et al. 2005, Kaner et al. 2007).

The first clinical "modern" brief intervention study was made by Kristenson and associates (1983). They conducted a study in which male citizens aged of 46–53 years were invited to attend health screenings. Those with highest scores on GGT were randomized either to an intervention or a control group. After 6 years the follow-up intervention group had significantly fewer sick days and hospitalizations, and suffered half the mortality rate compared to the control group without intervention (Kristenson et al. 1983). Ten years later Bien and colleagues (1993) concluded that brief interventions were often as effective as more extensive treatments. The public health impact of brief interventions was potentially according to Kahan and group potentially enormous; "given the evidence for the effectiveness of brief interventions and the minimal amount of time and effort they require, physicians are advised to implement these strategies in their practice" (1995). According to Wilk and associates drinkers receiving a brief intervention were twice as likely to reduce their drinking over 6 to 12 months as those who received no interventions (1997). A review by Moyer and Finney found "further positive evidence" for the effectiveness of brief interventions by comparing brief intervention both to untreated control groups and to more extended treatments (2002). The Alcohol and Public Policy Group summarized strategies and interventions to prevent or minimize alcohol-related harm in 2003 (Babor et al. 2003). They concluded that brief interventions give evidence of effectiveness in different cultures and countries and are also cost-effective. In their meta-analysis Ballesteros and associates support the

equality of outcomes among men and women achieved by brief interventions for excessive alcohol consumption in primary health care settings (2004).

It has been estimated that brief interventions reduce daily alcohol consumption on average by 17% and the intensity of drinking by 10% (WHO 1996). In a meta-analysis by Whitlock (2004) weekly drinking was seen to be reduced 13%–34% more in intervention groups than among controls. It has also been estimated that the number needed to treat (NNT) is on average 10 patients (Ballesteros et al. 2004), compared for example to tobacco smokers, where about 20 patients need to be advised to gain benefit. Nurses can also effectively intervene with patients (Littlejohn and Holloway 2008), (Cherpitel et al. 2009).

Brief intervention has been found to be effective in many studies, but opposite findings have also been published. Beich and colleagues (2003) found alcohol screening, assessment and intervention to be laborious and time-consuming activities. In the meta-analysis in question they estimated that only two or three subjects out of 1000 screened will benefit from brief intervention. Emmen and collegues (2004) found in their systematic review that evidence for the effectiveness of opportunistic brief intervention in general hospital setting for problem drinkers is still inconclusive. A group under Havard investigated articles on alcohol problems in the emergency department and found reduction in alcohol-related injuries, but the findings regarding alcohol consumption were less conclusive (2008). In England the recent National Alcohol Harm Reduction Strategy has acknowledged the need for further evaluation of screening and minimal interventions (2004, http://www.cabinetoffice.gov.uk/media/cabinetoffice/strategy/assets/caboffce%20alcoholhar.pdf). In response Holloway and associates found that either a brief self-efficacy enhancing intervention or the provision of self-help to heavy drinkers can reduce self-reported drinking by 10 alcohol units a week (2007).

Based on all the material available it may be concluded that in a primary health care setting brief interventions are effective and should be used for those individuals who are not actively seeking help at specialist agencies for alcohol problems (Current Care Guidelines Finland 2005, http://www.kaypahoito.fi/web/kh/suositukset/naytaartikkeli/tunnus/hoi50028, Kaner et al. 2007). In general hospital settings the prevalence of heavy drinkers is high and this frequency goes unrecognized (Canning et al. 1999). Holloway and colleagues concluded that to administer brief interventions in hospital is a simple means of helping heavy drinkers to reduce their alcohol consumption (2007).

5.3 Cost-effectiveness

Cost-effectiveness studies are methodologically complex and results are always approximations. The economic costs of alcohol use are multidimensional, including for example health care costs, losses in productivity, losses due to premature death, losses in crime-related productivity, alcohol-related crime which burdens the criminal justice system and the police. (http://pubs.niaaa.nih.gov/ publications/AA66/AA77.html 2005).

Brief interventions have proved to be a cost-effective strategy for reducing both risky alcohol consumption and alcohol-related problems (Heather 1996, Wutzke et al. 2001, Fleming et al. 2002, Bray et al. 2007, Kramer 2007). Fleming and colleagues found the benefit-cost ratio to be 4.3:1; an investment of $10 000 would result in a cost saving (for example fewer motor accidents crashes) of $43 000 (2002). Seppä and associates have estimated that screening and brief intervention for hazardous drinkers among 1600 adults in a primary health care setting would be cheaper than treating one alcohol –related pancreatitis case in specialized health care (2004). Kraemer and group (2005) found the incremental cost-effectiveness ratio [cost per quality-adjusted life-year (QALY)] from the societal perspective and discounted costs and benefits at a rate of 3%. The screening and intervention strategy dominated and was cost-saving compared with the no screening strategy. Babor and colleagues (2006) concluded that brief advice produces modest but statistically significant reductions in hazardous alcohol consumption.

The U.S. Preventive Services Task Force has recommended screening and behavioural counselling interventions in primary care to reduce alcohol misuse (Whitlock et al. 2004). As part of the 2006 update, a brief alcohol misuse screening and counselling intervention ranked in the top five, ahead of almost 20 other effective services (Ries et al. 2006). In the most recent recommendation alcohol misuse achieved score points similar to screening for colorectal cancer and hypertension, and to influenza or pneumococcal immunization (Solberg et al. 2008).

6. Obstacles to brief intervention

In spite of the convincing evidence of the effectiveness and cost-effectiveness of brief interventions this work has not become a routine part of every-day work in health care. A number of obstacles have emerged (Roche and Freeman 2004).

6.1 Patients' attitudes

One common misconception regarding alcohol screening and brief intervention is that patients will become angry if questioned about their drinking (Babor and Higgins-Biddle 2001). It has been found to be a common feeling among physicians that patients with alcohol- and other drug-related problems can be difficult, aggressive, deceitful, unmotivated and unwilling to change (Mistral and Velleman 2001).

In contrast to what health care professionals believe, patients generally have positive attitudes towards discussion of alcohol in the primary health care setting (Wallace and Haines 1984, Richmond et al. 1996, Aalto and Seppä 2004). In Canada in 1997 Herbert and Bass found that 85% of patients expected their doctors to ask about their drinking (1997). Babor and Higgins-Biddle concluded in the WHO manual that patients expect primary health care workers to be interested in the health effects of drinking (2001). Only 2% of patients have negative attitudes towards asking about alcohol drinking (Herbert and Bass 1997).

6.2 Professionals' knowledge, skills and attitudes

Lack of confidence, knowledge and skills are barriers to work with risky drinkers (Clement 1986, Roche et al. 1991a, Botelho and Richmond 1996). Generally, doctors feel that they should ask about patients' drinking (Herbert and Bass 1997). Bendtsen and Åkerlind have found that both general practitioners and nurses take a positive attitude towards early detection and intervention (1999). There is thus substantial consensus as to the physician's role in the early detection of risky drinking. In an early study Roche et al. found that general medical practitioners hold positive views overall regarding medical involvement with patients with alcohol problems (1991). These notwithstanding discrepancies have been found between patients' expectations of the doctor's role in promoting healthy life styles (Richmond et al. 1998).

Lack of adequate training has been found to be one of the major obstacles to brief intervention (Kaner et al. 1999, Aalto et al. 2001). This has led to a lack of understanding of the content of early-phase heavy drinking (Rush et al. 1994, Aalto et al. 2003). Earlier studies have found reach the same conclusion; physicians have had difficulties in defining "drinking problems" and their views as to what constitutes "safe" or "at-risk" drinking have varied (Thom and Tellez 1986, Roche et al. 1991). Medical education is needed, and there is evidence to suggest that improvements in levels of self-efficacy, i.e. the belief that one's own action will bring about a successful outcome, improves intervention rates (Gottlieb et al. 1987). Reid and associates found that only

28% were correctly identified as being 'at risk' by their general practitioner (1986) and a group under Kaner noted that where risky drinkers who were most likely to receive brief intervention were male, unemployed and technically trained patients, while those who were least likely to receive brief intervention were female, students and university-educated patients (2001).

Negative attitudes towards patients with alcohol problems may also act as a barrier to intervention in patients' alcohol use (Roche et al. 1996, Farmer and Greenwood 2001). Health workers' own attitudes to and own use of alcohol may be difficult to address (Babor and Higgins-Biddle 2001). Rush and colleagues found that many physicians are uncomfortable about bringing up issues which patients themselves have not identified (1995). Many general practitioners feel that it is not a legitimate part of their work to interfere in alcohol of other drug-related problems (Durand 1994, Roche et al. 1996). Aalto and associates found that is easier and better justified to ask about and discuss alcohol with patients if they have possible alcohol-related symptoms and signs (2003). Lack of self-efficacy plays a notable role in carrying out brief interventions for heavy drinkers (Aalto et al. 2003a). Therapeutic nihilism also shadows this work; many health professionals feel there is nothing they could do to help a person with an alcohol-related problem (Weller et al. 1992, Farmer and Greenwood 2001).

Lack of simple guidelines has been found to be a formidable obstacle in detecting and identifying patients with alcohol problems (Rush et al. 1995, Aalto et al. 2003b). The need for short and practical instructions is essential, but is only part of successful implementation. Skills-based training including use of a validated screening tool such as AUDIT, in conjunction with user-friendly and validated aids to brief intervention, can increase family practitioners' confidence in detecting and treating alcohol problems (Proude et al. 2006).

6.3 Other obstacles

Lack of time and adequate reimbursement are common reasons for avoiding time-consuming preventive services for alcohol problems (Nutting 1986, Rowland et al. 1988). Babor and Higgins-Biddle concluded one common reason expressed by health workers for avoiding alcohol screening and brief interventions is that it will take too much time (2001).

Medical schools have been estimated to devote less than 1% of total teaching hours to substance abuse. This would explain why so many physicians feel inadequate in treating alcohol-related problems (Searight 1992, Rush et al. 1994, Bendtsen and Akerlind 1999). When implementing new practice behaviour, practitioners need on-site personnel and ongoing infrastructure support (Botelho and Richmond 1996). According

to Kaner and associates doctors feel that government policies did not support preventive medicine (1999a).

Continuous training of both general practitioners and nurses has been found necessary to promote screening and brief intervention in today's health care services (Bendtsen and Akerlind 1999). The afore-mentioned study by Kaner's group noted an increase in the numbers of GPs who feel that they should be working with alcohol issues (1999a). Deehan and colleagues found that general practitioners are not unwilling, but untrained and lacking support to work with alcoholic patients (1997). One important question is extent to which research results from controlled clinical trials can be generalized and implemented in routine practice (Edwards 1997, Poikolainen 1999, Aalto et al. 2000, Andreasson et al. 2000, Johansson et al. 2002).

7. Implementation of brief intervention

7.1 Implementation theories

Study of policy implementation commenced in the U.S.A. in the 1960s. Public policymakers and program managers are responsible for effectively and efficiently using community resources to promote social goals. The aim of implementation research was to point out the possible gap between the intentions and statements of public officials (policy) on the one hand and the delivery of public services (performance) on the other. Studies sought to establish why a program with such great expectations produced such modest results. The subject of policy implementation is to understand what actually happens after a program is enacted or formulated (Mazmanian and Sabatier 1989).

Goggin and associates (1990) listed researches into three generations. The earliest, first-generation research on policy implementation was concerned with detailed accounts of how a given single authoritative decision was carried out. The approach has been criticized as being atheoretical, case-specific and noncumulative. Despite this criticism it demonstrated the complex and dynamic nature of implementation, and also emphasized the importance of a policy subsystem and the difficulties a subsystem creates for coordination and control. Second-generation research was concerned with the development of analytical frameworks to guide research on the complex phenomenon of policy implementation. Studies were now more analytical and comparative in perspective. Second-generation work focused on the same variables; policy form and content, organizations and their resources and people – their talents, motives, and predispositions (Van Meter and Van Horn 1975, Sabatier 1975, Van Horn

and Van Meter 1976, Sabatier and Mazmanian 1979, Goggin 1986). Second-generation research also relized the importance of time periods- at what point in history implementation occurs and over what period of time (Van Horn 1987). The principal aim of third-generation research is to be more scientific in explaining why implementation behaviour varies across time, policies, and units of government (Goggin et al. 1990). This last-mentioned group associate implementation behaviour with a set of activities which take place during the life of a program, not merely at its outset.

Compared to the first-generation work the second-generation, studies were more analytical and comparative in perspective (Goggin 1986). The top-down approach, which starts out from a policy decision, focuses on the extent to which its objectives are attained over time. Top-down scholars came in for criticism. Rather than start with a policy decision, a new "bottom-uppers" started with an analysis of the multitude of actors who interact at the operational (local) level. They also asked them about their goals, strategies, activities and contacts. Researches then used these contacts as a vehicle for developing a networking technique to identify the local, regional, and national actors involved in the planning, financing and execution of the relevant governmental and non-governmental programs (Hjern et al. 1978).

Third-generation implementation research consolidated earlier studies, its approach being to investigate why implementing actors make the decisions and take the actions they do. Goggin and colleagues (1990) introduced general guidelines to minimized potential problems in implementation programmes. First, approach measurement systematically; second, use multiple, independent sources to achieve the least biased assignment of values to the components; third, convene a panel of experts to aid in their construction, fourth, be sensitive to the dynamics of political communications and state and local politics.

7.2 Implementation in health care

Process evaluation has been essential in the planning of community-based health education. The diffusion theory addresses the general aspects of the way of how information spreads through groups. The diffusion theory suggests that innovations spread through populations and become accepted through a four-phase process: awareness, interest, trial and adoption (Roger 1983). Green and McAlister (1984) brought out five different groups in the adoption process. The process of diffusion of new innovation begins with the innovators. These are individuals who quickly become interested in a new idea and try it out with little prompting. Following the innovators, the largest segment of the target population, early adopters and an early majority, consider adopting the innovation. Finally, the innovation spreads to the late majority

and late adopters. Dignan and colleagues (1994) concluded that application of the diffusion model, in the context of the expanded detail added by information-processing theory, provides means for modifying and improving health education programs while they are being implemented. Hunter and group concluded that ultimately the impact of even the best clinical resource is constrained by the effectiveness of its implementation (Hunter et al. 2004).

There is currently no solid basis for assuming that a particular intervention or package of interventions will work. On the other hand, combination of information transfer and learning through social influence or management support can be effective (Wensing et al. 1998). Effective interventions are to hand to enhance preventive activities in primary care. Tailoring interventions to address specific barriers to change in a particular setting are probably important. Multifaceted interventions may be more effective, but also more costly, than single interventions (Hulscher et al. 2001).

7.3 Effectiveness of implementation of brief intervention

In the book 'Alcohol No Ordinary Commodity', a group under Babor list ten options as ‘best practices’ to reduce alcohol consumption in populations. These include minimum legal purchase age, government monopoly of retail sales, restrictions on hours or days of sale, outlet density restrictions, alcohol taxes, sobriety check-points, lowered BAC (blood alcohol concentration) limits, administrative licence suspension, graduated licensing for novice drivers and brief intervention for hazardous drinkers (Babor et al. 2003). Thus, brief intervention is the only healthcare-mediated method which has been proved to be effective.

With an eye to increasing screening and brief intervention in health care, different dissemination strategies have been studied. Community action is considered to be important ingredient of implementation. For example posters in bars and liquor stores have been used to increase public awareness of alcohol detriment. The width of community action against harmful alcohol consumption differs among countries and different cultures. Gomell and associates compared direct mail, tele-marketing and academic detailing (face-to-face visits) to increase the activity of brief interventions (1994). In each of these conditions a brief intervention package for hazardous alcohol consumption was marketed to physicians. The investigators found tele-marketing to be more cost-effective than academic detailing or direct mail in promoting the uptake of the package. In 1999 a group under Hansen found telephone contact and academic detailing to be more effective than direct mail in encouraging GPs to request a screening and brief intervention package (1999). In an earlier study Soumerai and Avorn found that academic detailing was the more cost-effective strategy when compared with direct

mail (1986). Davis and colleagues found direct mail and other less intensive strategies to be insufficient to effect change in complex counselling behaviours for lifestyle health issues (1995). In 1999 Kaner and group concluded that practice-based training, including support telephone calls, was the most effective and cost-effective strategy to encourage implementation of screening and brief intervention (1999b). Hunter and colleagues suggested that the workshop-based approach was effective in increasing doctors and nurses interest to working with alcohol-related patients (2004). Similar findings are reported in a study by Richmond and associates work; workshop and academic detailing was the most effective way to increase utilisation of brief interventions in primary health care settings (1998). A group under Peltzer concluded in their study that more attention should be paid to training modalities, more nurses should be trained in each clinic, clinic should be interview organization (low clinical workload, fewer competing priorities, and better team work), and changes encouraged in the attitudes of nurses (better compatibility of intervention with beliefs, and less perceived complexity of innovation) (2008).

WHO phase-IV aimed at a widespread, routine and enduring implementation of primary health care early identification and brief intervention throughout participating countries. All investigators shared the overall objective of the study, but the specific designs and procedures to be used were to a great extent flexible and varied among the participants due to the diversity of health system and political, cultural, socio-economic and legislative factors. Phase IV was an action research project in a real-world situation. Flexibility was contained within clearly pre set parameters. The aims were to generate the material needed for brief-intervention work, to train professionals with special emphasis on reframing perceptions of hazardous drinking, to motivate professionals to undertake brief interventions, and to estimate the costs of this activity. It was known before hand that implementation of brief intervention is an iterative project. The clearest results were obtained in producing material, arranging education and training and to some extent in reframing perceptions. However, engaging general practitioners in this activity proved difficult. (http://www.who.int/substance_abuse/publications/identification_management_alcoholproblems_phaseiv.pdf, Heather 2006)

In a systematic review Nilsen and associates (2006) included 11 studies published between 1998–2004. The works were divided into four categories depending on the implementation strategy adopted; mailed materials without training; telemarketing, including short introduction and material; materials and training; and materials, training and subsequent support. The studies were heterogeneous; the largest coherent group of articles comprised five studies; these compared the effectiveness of two or three implementation strategies (Gomel et al. 1998, Richmond et al. 1998, Hansen et al. 1999, Kaner et al. 1999b, Kaner et al. 2003). Three studies compared neither strategies nor

personnel categories (Digiusto et al. 1998, Andreasson et al. 2000, Aalto et al. 2003b). Two of them assessed the effectiveness of one implementation strategy using a control group (Andreasson et al. 2004, Babor et al. 2004), and two involved comparisons of personnel strategies (Bendtsen and Akerlind 1999, Babor et al. 2004). The conclusion was that it is difficult to determine how and under what circumstances brief intervention is most likely to be implemented in primary health care settings. The important finding was that the effectiveness of implementation generally increased with intensity of effort invested, even if results were modest in all studies.

Education and information campaigns alone have no great effect on people's behaviour (Edwards and Taylor 1994a, Edwards and Taylor 1994b, Babor et al. 2003). Many researchers have found that problem- or risky drinkers are interested in self-help materials (Holmila 1997, Cunningham et al. 2001, Karlsson et al. 2005). Public campaigns might also indirectly increase health care professionals' activity to undertake brief interventions by activating people to ask for advice.

The Primary Health Care European Project on Alcohol, (PHEPA) has summarized recommendations to implement brief intervention (PHEPA 2009, http://www.phepa.net/ units/ phepa/html/en/Du9/index.html). Training for health care professionals should be implemented with an eye to changing health care provider's behaviour. It is hoped that the introduction of simple identification tools, protocols and computerized support will to increase identification rates. Also ongoing support has proved to be important; training and support programmes should be tailored to the needs and attitudes of practitioners. Some patients might need more help than primary health care providers can offer, and provision of specialist help might increase the activity of primary and secondary health care providers (PHEPA 2009, http://www.phepa.net/units/phepa/html/ en/Du9/index.html).

7.4 Cost of implementation

Gomel and colleagues concluded that the cheapest strategy is too often used to advocate interventions to physicians without consideration of the effectiveness of the strategy (1998). Even if the long-term effectiveness of different implementation strategies is difficult to compare, some studies of cost-effectiveness have been made. Lock and associates found practice-based training combined with support telephone calls to be the most effective and cost-effective means of encouraging implementation of alcohol screening and brief intervention in primary health care settings (1999). McCormick and group report similar findings; telemarketing was the most cost-effective marketing strategy to encourage general practitioners to adopt screening and early intervention in alcohol problems (1999). A review by Funk and associates reached similar conclusions:

acceptance of a brief intervention program was more effective with use of telemarketing (65%) and academic detailing (67%) than with direct mail (32%) promoting awareness of a brief alcohol intervention program (2005).

Aims of the study

This study is part of a project, which aimed at implementing brief intervention in the Pirkanmaa region health care services. The broad was to study objective the brief alcohol intervention implementation process.

The specific aims were to establish:

1. the occurrence of alcohol-related diagnoses and hazardous drinking in specialized health care,
2. health care personnel's knowledge, skills, and attitudes towards alcohol in primary, occupational and specialized health care,
3. means of increasing early identification and brief intervention
4. the effectiveness of the AUDIT questionnaire on behaviours in the general population,
5. how brief intervention could be dovetailed everyday work.

Subjects and Methods

The study was carried out in the Pirkanmaa Health Care District, an area with a population of 460 000, about 8.9% of the total population of Finland. The series comprised of three separate materials (I, II, and IV) and, based on the results of these three studies, an action project in the region to implement brief intervention (III and V).

Study I; Prevalence of risky drinkers

Subjects

In study I data were drawn from the medical records of patients treated at the outpatient clinics and the emergency room in Tampere University Hospital during the years 1988–1993. Patients with a substance use-related diagnosis (ICD-9) among those visits were recorded. To include hazardous drinkers prospective data were collected over an eight-week period in 1994. During this period a separate form including an alcohol questionnaire was filled in by all patients attending the outpatient clinics or emergency room. In this separate form the treating physician was asked to give her/his opinion on whether a substance use problem had contributed to the patient's illness or injury.

Methods

The diagnoses recorded in retrospective discharge data in Tampere University Hospital over six years were compared with the prospective data separately in all specialities. Data were statistically analyzed using ANOVA, t-test and χ^2 TEST.

Study II; Attitudes, knowledge and skills among professionals

Subjects

In study II 473 questionnaires comprising 40 questions each with two to six alternatives, were mailed to 139 units in the Pirkanmaa Health Care District; all primary and occupational health care units and each department in specialized health care in hospitals (Appendix 1.). Anonymous responses were requested from one doctor and one

nurse per unit and ward. Respondents' characteristics and their own alcohol consumption, how often they met heavy drinkers and how often they thought that alcohol was the reason for seeking medical care, their attitudes and skills in discussing alcohol consumption with patients, skills and knowledge in using brief intervention and motivational skill to influence alcohol consumption were asked after. Further, the respondent's knowledge of different means of recognizing heavy drinkers, and their opinion as to how important the subjects thought their employers and the whole working group found treating heavy drinkers were asked.

Methods

Questionnaires were analyzed statistically using BMDP statistical software (BMDP, Cork, Ireland). The χ^2-test was appeared to measure differences between specialized health care, primary health care, and occupational health care.

Study III Training programme for professionals

Subjects

This action research project was based on information previously collected (I, II) and studied the process of implementation of brief intervention in different health care settings (hospitals, primary health care and occupational health centre). The Pirkanmaa Hospital District facilities comprise one university hospital, three regional hospitals and twenty-two primary health care centres with occupational units. The leaders of the municipalities, hospitals and primary health care were engaged in the project. There was a half-day information seminar for the leaders. Five half-day seminars with the same content were arranged for health care professionals in different parts of the region. Sessions included a short lecture, a patient-doctor or a patient-nurse role-play and a workshop. Participants came from 26/34 municipalities, altogether 50 physicians and 117 nurses. Those attending were envisaged as key persons to spread information in their own working environments.

Methods

After six months, one seminar was organized in Tampere for the key persons to follow the progress of the project. Specific topics brought up by the moderators were the activity of brief intervention (BI), educational needs and factors inhibiting the use of BI.

The BI activities undertaken during the six-month period were recorded, and notes were taken on the main themes during the seminars. The discussions in the seminars formed the basis for further implementation activities.

Study IV; Activating the general population to think about their own drinking

Subjects

Study IV sought to activate members of the community to think about their own drinking. The AUDIT (Babor et al. 1994) questionnaire was delivered, enclosed with a local bi-weekly newspaper, to all households (n=90 000) in Tampere (Appendix 2.). A specific brochure based on one structured AUDIT questionnaire was planned to attract readers and it also included a chart to help them calculate the number of drinks usually consumed per week. In a telephone survey, using the Computer-Aided Telephone Interview system, data were collected from 500 randomly selected inhabitants aged 18 and over (the legal drinking age in Finland is 18 years) on a quota basis stratified by age and gender. The telephone survey covered twenty- two questions; background information, alcohol consumption, how well AUDIT pamphlet and the community action project Booze Weeks were noticed and whether it had any effect on alcohol use. Also the CAGE questionnaire items were asked, 1. Have you ever felt you should Cut down on your drinking? 2. Have people Annoyed you by criticizing your drinking? 3. Have you ever felt bad or Guilty about your drinking? and 4. Have you ever taken a drink first thing in the morning (Eye opener) (Mayfield et al. 1974), to categorize the drinking consequences.

Methods

Based on drinking frequency and CAGE score, respondents were divided into groups based on their self-reported drinking (CAGE scores and drinking frequency). The groups were compared using the χ^2 tests.

Study V; Final instructions on conducting brief alcohol intervention in health care

Materials

To answer the needs addressed in Study III (to create short instructions for primary health care staff on how to identify and treat risky drinkers), this study combined the

information from three separately conducted studies and all feedback information from professionals during the Finnish arm of the PHASE IV WHO implementation study (Heather 2007). In the first study a structured questionnaire had been mailed to all general practitioners (77 GPs) and nurses (177 nurses) working at the Tampere City Communal Health Centre. Health care professionals answered questions on about their attitudes, knowledge, beliefs, skills and needs for training in relation to risky drinking patients (Aalto et al. 2001). In the second study a survey patients was organized in two health care clinics which provides service for a population of about 30 000 each. After their appointment with GP or nurse 665/1000 consecutive patients reported whether the general practitioner or nurse had asked and/or advised them about their alcohol consumption (Aalto et al. 2002). The third study included six videotaped focus groups (altogether 18 GBs and 19 nurses) to obtain information on obstacles to brief intervention (Aalto et al. 2003a).

Methods

All three surveys and feedback information were separately analyzed blind by three different persons. Findings were categorized as 1) ethical grounds for discussing alcohol, 2) tools which professionals find feasible in undertaking brief interventions and 3) the best way to conduct brief interventions. Final instructions were then developed. These were then introduced to the original focus group participants to establish the validity of the interpretations and whether they accurately reflected the professional's understanding. The final instructions were then mailed to all professionals in the field.

Results

Substance use-related outpatient consultations in specialized health care (I)

In the retrospective study, covering the years 1988–1993, substance use related diagnoses comprised 0.4% (6666/1 555 898) of all recorded diagnoses. There was no significant change in the percentage of these diagnoses during these years. During the eight weeks' prospective study period, when the separate alcohol questionnaire form was used the prevalence of substance use-related diagnoses was 1.1%, significantly higher than in the retrospective study ($p<0.001$). Altogether 5.6% (1401/25 014) of patients had been registered as having made a substance use-related visit, and there was a statistically significant difference compared to the retrospective data ($p<0.001$).

The greatest numbers of substance use-related visits were in the retrospective data the psychiatric outpatient clinic and the emergency room. Then came neurology, internal medicine and surgery clinics. Using the separate form, in the prospective part of the study, the greatest number of substance use-related visits to outpatient clinics was in the emergency room. Then came psychiatry, otorhinolaryngology, neurology, surgery and internal medicine clinics. (Table 1.)

Table 1. Substance use-related visits to the outpatients clinics based on discharge data and on separate form

Outpatient clinic	**Retrospective data**		**Prospective data**	
	%	n	%	n
Psychiatry	3,8	236/6150	6,0	523/8717
Emergency room	2,0	650/32356	12,5	511/4088
Neurology	1,7	153/8782	4,0	36/900
Internal medicine	1,0	458/45297	2,0	65/3250
Surgery	0,8	310/39267	3,0	142/4733
Otorhinolaryngology			4,0	75/1875

Opinions on alcohol-related issues among professionals in primary, occupational, and specialized health care. (I I)

Of the health units 51% (71/139) and of professionals 39% (186/473) returned the mailed questionnaire (Appendix 1.). Of these respondents 42% (79/186) estimated that alcohol was very or quite often the reason for patients to seek medical care; 55% in specialized, 45% in primary and 26% in occupational health care ($p<0.001$). Altogether 38% (69/182) found it fully acceptable to discuss alcohol consumption with patients (no statistically significant differences between primary, occupational or specialized health care settings). Concerning knowledge and skills, 68% (125/185) thought that they could bring up alcohol problems for discussion very or quite well (no statistically significant differences between different settings). Attitudes of health care professionals to heavy drinkers were fairly positive. Fifty-nine per cent of the respondent (110/185) found it very or quite meaningful to ask after patients' alcohol consumption (no statistically significant differences between the settings): 71% (131/185) considered early recognition as well as the treatment of heavy drinkers fairly, very or eminently appropriate for their work 43% (26/60) in specialized, 75% (51/68) in primary, and 95% (54/57) in occupational health care ($p<0.001$). Respondents' own alcohol consumption did not correlate with attitudes, knowledge or skills.

Brief intervention for heavy drinkers: an action project for health care implementation (III)

Some participants in the initial seminar felt brief intervention to be less difficult and time consuming than expected, but many felt a lack of skills to meet and motivate heavy drinkers. Based on the needs of health care professionals a practical video (17 min) was produced. The film shows a general practitioner's consultation with a heavy drinker with abdominal complaints. Two posters and a 'booze quiz' pamphlet, including the AUDIT (Appendix 2.) and the Finnish risk limits of alcohol consumption, were produced. The posters and the pamphlet were placed in all waiting rooms in regional health care premises. The booze quiz pamphlet was also delivered to every household in Tampere (IV).

For the key persons a discussion session was arranged six months later. Brief intervention activity had varied widely in different units. The most active units had used role-plays in educating other health care professionals, whereas some had not arranged instruction at all. Nurses especially felt that educating and motivating physicians was

difficult. It was felt that brief intervention was not as time consuming as expected, and this view had tendered attitudes more positive towards using brief intervention. In many units, however a lack of skills was still recognized and further education was seen to be necessary. It was found most important to learn how to motivate patients to undergo intervention and how to keep professionals motivated while working with heavy drinkers. One year after the original key person training seminars an additional half-day education session on motivational skills was arranged based on the needs expressed.

AUDIT questionnaire as a tool for community action against hazardous drinkers (IV)

Five hundred respondents were contacted for a telephone interview. Total alcohol abstinence was reported by 11.2% (56/499) and 89.0% (443/500) reported consuming alcohol. Based on the CAGE questions there were 80.1% (355/443) with CAGE scores 0–1, and 19.9% (88/443) with CAGE scores $\geq$2. There were no statistical differences between the CAGE score-based groups in any of the variables studied. Altogether, respondents had noticed the Booze Weeks campaign well, of all respondents 74.0% (370/500), of abstainers 60.0% (36/60) and of alcohol-consuming subjects 75.9% (334/440). Almost half of the respondents who consumed alcohol had calculated their AUDIT scores and discussed the pamphlet with other people (no difference between the groups). Respondents who drank more frequently reported thinking more often about their alcohol consumption (54.9%; 28/51), and trying to reduce it (24.8%; 31/125) as compared to respondents who were less frequent drinkers , where the corresponding figures were 23,3 (17/73) and 15.1 (29/192), ($P<0.000$ and $P < 0.000$).

Brief alcohol intervention as a daily routine. Description of an action research project creating instructions for primary health care. (V)

The need for concise and practical instruction on early identification and brief intervention arose from among health care staff. In collaboration with researchers and project workers primary health care professionals created instructions for early identification and brief intervention in risky drinking. Most health care workers felt uncomfortable with systematic screening, preferring to use brief intervention in certain situations. If necessary alcohol-dependent patients should be referred to specialist clinics (AUDIT >14); risky drinkers (AUDIT 8-14) could receive information on health risks and a new appointment with doctor or nurse. Based on these needs short instructions were distributed.

Discussion

1. Weaknesses and strengths of the study

Finland has a long history of interest in brief alcohol intervention, both in research and in everyday work (Antti-Poika et al. 1988, Suokas 1992, Kuokkanen and Teirila 2001). For almost twenty years there have been sporadic activities in the primary, occupational and specialized health care fields to promote brief intervention in real-life work. At the practical professional level such activity has been sparse and short-lasting.

The present undertaking was the first in a series of broad implementation projects in Finland. It started in the mid-2000 in the Pirkanmaa region, deriving from perceptions of the low level activity in alcohol-related matters in health care (Study I). The target groups included both primary and occupational care personnel as well as hospital settings. The project used modern and multi-faceted implementation tools, e.g. not only short lectures, but group-work and role play. Additionally, it built up local strategic alliances and also used a population-wide approach. The researchers traveled around the region to make learning sessions more easily accessible for all.

The strength of the present project was its practicality; it aimed at implementing in health care an activity, which had proved to be efficient. At the same time it adopted modern ways of doing this. It aimed at motivating professionals by measuring the impact of hazardous drinking in their work environment (Study I) and by inquiring into their attitudes to the possibility to intervening in them (Study II). The project also examined the impact of community action in the implementation process (Study III). The process thus used all the modern methods, which have since been accepted in alcohol implementation for example in the WHO PhaseIV work (Heather 2006b). In summary, even if the results of the present project, when measured as an increase in brief intervention activity, have remained modest it can be seen as an asset and a model in planning future implementation work in Finland (Seppä 2008).

This study project comprised both qualitative and quantitative elements. The quantitative parts were studies I, II and IV and the qualitative studies III and V. Combining different methodologies can also be considered strength in an implementation study. Study I is one of the first worldwide which prospectively also included hazardous drinkers in estimating the incidence of alcohol problems in a health care setting.

These advantages not withstanding, the individual studies also have some weaknesses. Inquiry into the respondent's owns alcohol consumption might be one reason for the low response rates found in study II. Lack of time and the burden imposed on the health care professional in several studies may likewise have lowered interest. Some work units did not answer the questionnaire at all. These units might in fact have the most negative attitudes to brief intervention, fuelled by a chief physician who did not deliver the questionnaire to his staff at all. In summary, the low response rate would indicate that real attitudes are even less favourable than found in this study.

Studies III and V were action research, which produced new information for brief intervention implementation. As such, they did not increase the activity to any measurable degree. The information gathered, however, serves the final aim; to promote brief intervention in the region. Its importance may be assessed in the light of subsequent developments (Kuokkanen et al. 2008, Seppä et al. 2008).

2. Risky drinking is more prevalent in health care than documented

There is a wealth of evidence regarding the detrimental impact of excessive alcohol consumption.

In many developed countries such as Finland it will be possible to develop reasonable estimates for some of the costs associated with alcohol consumption. It is also recognized that data are frequently lacking for many of these costs. It is important to define and document the extent of hazardous risky drinking in order to plan the use of resources and effective treatment. Keskimäki and Aro have concluded that the validity of the Finnish hospital discharge registry is exceptionally high (1991). Unfortunately in hospital settings medical records do not offer good-quality data on patients' hazardous alcohol consumption. It has been estimated that the prevalence of alcohol abuse or dependence in outpatient settings generally varies from about 15% to 20% (Putnam et al. 1982, Cleary et al. 1988, Fleming et al. 1998). Hospitalized patients are estimated to be hazardous drinkers in 13 to 32% of cases (Cherpitel et al. 2004, Fleming et al. 2007, Cherpitel and Ye 2008). There is a wide information gap between studies conducted and medical records of alcohol and other drug-related diagnoses. The data in Study I showed that the rate of substance use-related diagnoses is 0.4–0.5% per year in medical records. Alcohol-related diagnoses make up 99% of all substance use related diagnoses (I).

Study **I** compared retrospectively and prospectively collected data on substance use-related diagnoses from a university hospital setting. The number of substance use-

related visits was according to the separately completed forms (prospective) fourteen-fold when compared to the number of substance-use related diagnoses in the retrospective discharge data. Only one fifth of the visits registered as substance-use related in the separate form had a documented substance use- related diagnosis. As far as we know no similar studies have been undertaken to ascertain how a separate form activates health care professionals to detect substance abuse. In spite of the increased prevalence of substance use diagnoses the number of recorded diagnoses is smaller than documented in the literature. (Taylor et al. 1986, Antti-Poika et al. 1988, Seppä and Mäkelä 1993, Cherpitel et al. 2004, Fleming et al. 2007, Cherpitel and Ye 2008, Rose et al. 2008).

Our findings indicate that planning the use of resources to identify and treat alcohol related symptoms and diseases cannot be based on data drawn from medical records. International economic cost studies help to identify information gaps. Discharge data would give a better picture of the extent of substance use in specialized health care if there were an alternative item "substance use may be related to the patient's presenting problem" in the discharge data, preferably electronic. Also adding hazardous drinking as a diagnostic category has been suggested (Saunders et al. 1993).

One reason for under-documentation might be that there is a risk of patients losing some insurance benefits. Insurance companies constitute a substantial factoring health care financing. In the U.S.A. since 1947 most states have allowed insurance companies to refuse payment on a claim in which an individual has been injured and alcohol use was documented. This has been found to be a deterrent to alcohol screening in hospitals and emergency departments (Schermer et al. 2003). The U.S. National Association of Insurance Commissioners recently passed a model law, which disallows such denials. The National Conference of Insurance Legislators has recommended that states adopt this model. Many states have recently done so, which could be a model for European countries. By the same token we cannot deny treatment of lung cancer because of smoking or diabetes complications, which are dependent on obesity.

In conclusion, substance-, especially alcohol-related symptoms and risky (hazardous) drinking are also common in special health care. Discharge data underestimate substance use-related problems and the needs for resources in specialized health care.

3. Obstacles and facilitating factors in brief alcohol intervention are manifold

3.1 Attitudes among health care professionals vary

Professionals consider excessive consumption of alcohol a significant problem in health care; 42% here thought that alcohol problems are a common reason for seeking medical help (II). Respondents' opinion on patients' attitudes toward asking about alcohol consumption was considered neutral or positive (II). Our findings are similar to those from Canada, where 85% of patients expected doctors to ask about their alcohol habits (Herbert and Bass 1997). Similar findings have been reported from Great Britain (Wallace and Haines 1984). Of the total respondents 32% considered that discussion of a patient's alcohol consumption is not acceptable. Doctors evinced significantly more prejudiced attitudes toward asking about alcohol consumption than patients. Doctors may feel that alcohol consumption is the patient's private affair; also heavy drinkers are often considered to be difficult and hopeless patients to treat, which makes it easier not to ask about alcohol consumption. In our study respondents' own alcohol consumption did not correlate with attitudes, knowledge or skills. Although an 'alcoholic' is said to be someone who drinks more than his doctor, there might be some truth behind this. Early recognition as well as treatment of heavy drinkers was considered fairly, very or eminently appropriate for their work by 71% of respondents. These results are similar to those reported in other studies (Roche et al. 1991, Herbert and Bass 1997, Bendtsen and Åkerlind 1999). Nevertheless, almost one third did not consider this activity appropriate. A similar group of GPs has also been found in earlier studies (Rush et al. 1995).

3.2 Professionals need more knowledge and skills

Even if health care professionals' knowledge of structured alcohol detecting questionnaires was poor, they thought that they could bring up alcohol problems for discussion. There was some belief that they could influence the patient's alcohol behaviour or that they had a good command of motivational skills. Brief intervention was a fairly new phenomenon in 1996 and even to pronounce the Finnish term for brief intervention "mini-interventio" was difficult. According to our postal survey health care professionals did not believe they could influence patients' alcohol behaviour. Defining

the target group for BI has also been seen to be difficult in international studies (Thom and Tellez 1986, Roche et al. 1991). Hence "reframing perceptions" has in later projects been felt to be essential (Heather 2006). Intervention rates can be increased by supporting professionals' self-efficacy (Gottlieb et al. 1987). Good skills and updated knowledge of the effectiveness of BI can be seen as an impulse to for high self-efficacy.

3.3 People and patients are willing to consider their own drinking

The book Alcohol: No Ordinary Commodity presents epidemiological data on the global burden of alcohol-related problems and scientific evidence for strategies to prevent or minimize the detriment (Babor et al. 2003). In general, effectiveness is strong in the matter of regulating the physical availability of alcohol and the use of alcohol taxes. Public service announcements are messages prepared by non-governmental organizations, health agencies and media organizations that deal with responsible drinking. Despite their good intentions public service announcements alone have proved ineffective in reducing alcohol-related harm. On the other hand, there are few studies of the influence of announcements on the individual level. We found (IV) that subjects who drank most frequently were also the most likely to have noticed the campaign. Our findings were similar to those reported in a few published articles, namely that those who drink the most are also most concerned about their drinking and are interested in receiving help to control their drinking (Werch 1990, Cunningham et al. 1999, Karlsson et al. 2005). Postal awakening self-help material may have an important role in helping problem drinkers and could provide initial motivation to seek treatment and discuss alcohol with their own physician. Alone this is hardly effective, but as a part of a wider campaign it might be a good contributing factor in distributing information about alcohol. (Hulscher et al. 2004)

4. Implementation can be promoted

4.1 Tools for practical work are essential

In Finland the Pirkanmaa Hospital District was the first area nation-wide area in which brief intervention implementation to the whole health care area was initiated. There are many local difficulties in implementing new activities. Gunn has listed some of the obstacles involved: adequate time and sufficient resources are not made available for the programme or policy, there is a poor understanding of and disagreement on objectives, tasks are not fully specific or in appropriate sequence and there is imperfect

communication and co-ordination (Gunn 1978). These views need to be taken into account in assessing the feasibility of implementation in a local setting.

The main aim of the action research project here was to implement brief intervention in different health care settings. First, leaders were motivated by giving information on effectiveness and cost effectiveness (III). To promote knowledge and motivational skills, a half-day information seminar included a lecture about alcohol consumption, screening and brief intervention and costs and benefits involved. All the information given was tailored and based on earlier study results (I, II). Practical skills and self-efficacy were supported by a role-play performance. This was a particularly successful and proved an awakening experience for many health care professionals. The strange word 'mini-interventio' ('brief intervention') became more familiar and many participants found they had already in fact done brief intervention or brief intervention-like work with patients. The brief intervention was not so difficult and time consuming as than expected. The work made the participants think about their own circumstances and possibilities to implement brief intervention. Also, a poster and a video were produced based on feedback information from the field (III). Public awareness of brief intervention was enhanced by a mailed brochure (IV). The project thus availed itself of all the multi faceted activities considered important for implementation (Hulscher et al. 2004).

Even though the focus of activity is in primary and occupational health care, there are also promising findings in specialized health care, most in the emergency rooms.

4.2 Clear instructions are needed

Based on local needs (III, V), tailored instructions on screening and brief intervention were created (V). A need for simple guidelines arose especially in focus group discussions (Aalto et al. 2003a), but was evident throughout the fieldwork (III, V).

Many primary care physicians are working sub optimally in diagnosing and referring patients who meet fully diagnostic criteria for abuse and dependence (McQuade et al. 2000). If these patients are difficult to identify we must ask how many hazardous drinkers go unidentified? McQuade and colleagues recommend that by screening every patient, primary care physicians will have an opportunity to increase their sensitivity in recognizing alcohol problems, and possibly intervening before serious consequences cause a decline in their patients' health (2000). The US Preventive Services Task Force likewise recommends screening of all adolescent and adult patients not only against diagnostic criteria for abuse and dependence but also for potential harmful and hazardous use of alcohol (Williams and Wilkins 1996). There was controversy in the interactive discussions regarding systematic screening; only certain

complaints or situations would inquiry and counsel. The final instructions include a list of situations when staff should ask a patient about alcohol (V). This opportunistic approach to screening has been preferred in several other countries as a feasible step in implementation (Heather 2006).

At the commencement of the Pirkanmaa Project (I) the aim was to implement brief intervention at all health care levels, including special, occupational and primary health care. Primary and occupational health care workers were most favourable regarding brief intervention. In our study (II) early recognition as well as the treatment of heavy drinkers was considered fairly, very or eminently appropriate for their work; 43% in specialized health care, 75% in primary and 95% in occupational health care in 1996.

There is now evidence that physicians' attitudes towards screening and brief intervention are more positive than a few years ago and activity in undertaking brief intervention has increased in primary health care. Surveys among general practitioners organized in Finland in 2002 and 2007 revealed that the activity has increased and only one fifth of GPs do not intervene at all. The occasionally intervening group of doctors has increased about ten per cent (49.6 -> 61.2%) and the regularly intervening group eight per cent (9.4 ->17.7%) (Seppälä et al. 2010) .

Also worldwide primary health care has been considered most important for brief intervention (Anderson 1996, Heather 2006, Kaner et al. 2007). The Reports 'From theory to practice. Integration of a brief intervention into health centre work and occupational health care disseminates the tools and know-how on brief interventions and its implementation in daily work in Finland (Seppä 2008).

Changing practices in health care is difficult as is measuring changes in brief intervention activity. However there are currently promising results of increasing activity. In general opinions on drinking have become stricter, and the discussion of alcohol consumption is found more acceptable than a few years ago. Maintaining and spreading brief intervention activity to the whole health care setting is a challenge, but the basis for intensifying activity can be considered better than ever.

Summary and conclusions

The aim of this action research study was to step up activity in identification and treatment in alcohol-related matters, especially in brief alcohol intervention in the Pirkanmaa region health care in Finland. The basis for implementation was built on knowledge of the local prevalence of substance use (I), and on health care professionals' attitudes, knowledge and skills in relation to brief intervention (II). Implementation (III) was boosted by community action (IV) and by simple instructions, created in collaboration with professionals, on how to conduct brief intervention (V).

The number of substance use –related diagnoses in hospital documents had remained stable during the years 1988–1993, constituting 0.4% of all diagnoses (I). When a separate form was used to fix professionals' attention during a period of eight weeks, the prevalence of substance-use related diagnoses increased to 1.1%. Altogether, the percentage of substance use-related visits was 5.6%, being highest in the emergency setting (12.5%) and in psychiatry (6%). Sometimes physicians seem to be aware of a patient's substance use but do not record it. This gives a false conception of the prevalence of this disease group. In the present study documentation of substance use-related visits increased dramatically upon application of a separate form and revealed the real significance of this disease category.

Health care professionals in primary, occupational and specialized health care held early recognition as well as treatment of heavy drinkers to be a natural part of their work (II). They also thought that patients' attitudes towards inquiry into their alcohol consumption were positive. Attitudes towards asking about patients' alcohol consumption were fairly positive in all three settings, even if only 38% (69/182) found it fully acceptable to discuss alcohol consumption with patients. Of the total respondents two-thirds reported that they were able to bring up possible alcohol problems for discussion. In spite of this only one-fifth felt that they could influence patients' alcohol behaviour or that they had a good command of motivational skills. The findings indicated a clear need to increase the knowledge and skills of health care professionals in relation to brief alcohol intervention.

Practical implementation of brief intervention among all health care professionals in the Pirkanmaa hospital district (III) was based on earlier information from the region (I, II) and on previous international research findings on of implementation. Engaging health care leaders was the first step. The training programme aimed at lowering barriers to brief intervention and it was organized to exert an umbrella effect. Key persons were trained first. The training session included a short lecture, which provided

knowledge and a theoretical frame for the activity, role-playing to improve practical skills and group work to organize the action individually in the respective centres. The key persons were to spread information in their own centres based on the method used in the initial session. They were also provided with all the material used in this session. Feedback six months later revealed that especially role-playing was considered good and some units had used it in educating others. On the other hand, brief intervention activity varied widely in different units. To answer the need from the field, a practical video, two posters and an AUDIT booze quiz leaflet were produced.

A local community action campaign was activated to induce citizens in Tampere to cut down their drinking. The AUDIT booze quiz leaflet was, as part of this project, delivered to every household in the city. More than three quarters of those consuming alcohol had been aware at the campaign. In our study (IV) heavy drinkers noticed the leaflet with the AUDIT better than lesser drinkers. Thus, community action may lead to open discussion of alcohol and provide the initial motivation to seek treatment. If patients ask for help, professionals also have to undertaken brief interventions, which can be considered to increase brief intervention activity.

Based on patients' and professionals' positive attitudes towards brief intervention and the need for short, practical instructions on conduct of it, this study combined earlier information in order to create these instructions (V). This involved action and feedback from health care professionals; the aim being to create a valid and feasible instrument for everyday work. Primary health care professionals were interested in carrying out brief intervention, but not systematically. Hence a list of situations was collected in which brief intervention was desirable, what to do in practice and when to refer. This instruction was the "mini-model", the least that should be done. It allowed doing more, but also gave permission to refer.

Much basic information is needed for wider implementation of brief alcohol intervention. This study showed that in health care heavy drinking is a common and underestimated problem. Efforts to motivate professionals to detect heavy drinkers, to make their attitudes more positive and to increase their knowledge and skills were seen to be needed in order to promote the activity. Also, wide community action and continuous dialogue with professionals was essential to create appropriate guidelines on brief intervention in health care. Further efforts are needed to evaluate and support the activity.

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Appendix 1

Appendix 2